REMARKS

Claims 1-15 are pending in this application; claims 9-15 are withdrawn from consideration. In view of at least the following remarks, reconsideration and allowance are respectfully requested.

I. Interview Summary

Applicants appreciate the courtesies shown to Applicants' representative by Examiner Li and Examiner Mayes in the November 13, 2009 interview. Applicants' separate record of the substance of the interview is incorporated into the following remarks.

II. Response to Restriction Requirement

Applicants confirm the oral election of Group I, claims 1-8, with traverse.

It is respectfully submitted that the subject matter of all claims 1-15 is sufficiently related that a thorough search for the subject matter of any one Group of claims would encompass a search for the subject matter of the remaining claims. Thus, it is respectfully submitted that the search and examination of the entire application could be made without serious burden. See MPEP §803 in which it is stated that "if the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits, even though it includes claims to independent or distinct inventions" (emphasis added). It is respectfully submitted that this policy should apply in the present application in order to avoid unnecessary delay and expense to Applicants and duplicative examination by the Patent Office. Thus, withdrawal of the Restriction Requirement is respectfully requested.

III. Rejections Under 35 U.S.C. §103

The Office Action rejects claims 1-4 and 6-8 under 35 U.S.C. §103(a) as allegedly being unpatentable over Kurihara et al. (JP-A-2000-223121, hereinafter "Kurihara") in view of Sugano et al. (JP-A-2002-083595, hereinafter "Sugano"); and rejects claim 5 under 35 U.S.C. §103(a) as allegedly being unpatentable over Kurihara in view of Sugano and further

in view of Takami et al. (U.S. Patent No. 5,340,670, hereinafter "Takami"). Applicants respectfully traverse the rejections.

Claim 1 recites "[a]n electrode carbon material to become a constituent material for an electrode of a nonaqueous electrolyte battery; wherein the electrode carbon material is formed *by way of a plasma processing step of subjecting a material composition to high-frequency thermal plasma processing in a plasma gas atmosphere including a sulfur-containing compound*." In contrast, neither Kurihara nor Sugano discloses a thermal plasma treatment, much less "a plasma processing step of subjecting a material composition to high-frequency thermal plasma processing in a plasma gas atmosphere including a sulfur-containing compound" (as recited in independent claim 1). The Office Action acknowledges that Kurihara fails to disclose the above feature of claim 1, and relies upon Sugano to allegedly disclose "adding a sulfur compound into the carbon material by using a gas atmosphere including a sulfur-containing compound" (*see* page 5, lines 1-3, of the Office Action). However, Sugano merely teaches "how to mix both by a mixer etc. ...the mixing method in particular of a pitch and sulfur is not specified. After carrying out wet blending using media, such as water and methanol, there is a method of drying or a way sulfur or both do stirring mixing only of the pitch by a molten state by warming" (*see* machine translation of Sugano, paragraph [0011]).

Furthermore, the recited "plasma processing step of subjecting a material composition to high-frequency thermal plasma processing in a plasma gas atmosphere including a sulfur-containing compound" (in claim 1) imparts distinct structural characteristics to the claimed electrode carbon material. Section 2113 of the MPEP states that "[t]he structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be

expected to *impart distinctive structural characteristics to the final product.*" *See, e.g.,* In re Garnero, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979), emphasis added.

The present specification teaches the following structural features of the claimed electrode carbon material (and advantages stemming therefrom), which result from subjecting the material composition to high-frequency thermal plasma processing in a plasma gas atmosphere including a sulfur-containing compound:

> Since the electrode carbon material of the present invention is subjected to high-frequency plasma processing, a turbostratic structure occurs in the vicinity of the material surface, whereas *the trace of oxygen and hydrogen existing on the material surface is eliminated, whereby the surface is reformed.* Since the plasma processing is performed in the plasma gas atmosphere including a sulfur-containing compound in particular, elementary sulfur or a sulfur-containing functional group including sulfur is introduced onto the material surface, whereby *the presence of these sulfur components can make the SEI producing reaction favorable and improve the stability of SEI.* This can *sufficiently reduce the irreversible capacity generated by the SEI and can add a reversible capacity due to the sulfur component.* Therefore, using the electrode carbon material of the present invention as a constituent material for an electrode can improve the reversible capacity and charging and discharging efficiency (initial charging and discharging efficiency in particular) of a battery equipped with this electrode.

See paragraph [0013] of the present specification (emphasis added). Contrary to the Examiner's assertions, Applicants submit that the method disclosed in Sugano would not allow one to arrive at the claimed electrode carbon material with the properties discussed above. Specifically, Sugano neither discloses high-frequency thermal plasma processing nor a plasma gas atmosphere. Thus, Sugano is not reasonably pertinent to the problem addressed by the claimed invention. Additionally, the method disclosed in Sugano is not equivalent nor analogous to the recited plasma processing step and the product of this plasma processing step because Sugano is not in the field of endeavor of processes that involve high-frequency thermal plasma processing. Although some sulfur gas may be produced from the method disclosed in Sugano, Sugano does not disclose or suggest a "plasma processing step of subjecting a material composition to high-frequency thermal plasma processing in a plasma

gas atmosphere including a sulfur-containing compound," as recited in claim 1. Kurihara also fails to disclose or suggest this feature of claim 1.

Because the applied references fail to disclose or suggest high-frequency thermal plasma processing in a plasma gas atmosphere including a sulfur-containing compound, the materials disclosed in the applied references do not possess the above structural characteristics of the claimed electrode carbon material (or the advantages stemming therefrom).

For the reasons set forth above, Applicants submit that Kurihara and Sugano fail to teach, suggest, or establish any reason or rationale to provide the combination of features recited in independent claim 1, from which claims 2-4 and 6-8 variously depend. Takami is only relied upon in the Office Action for its teachings of the limitations of claim 5, and thus Takami fails to cure the aforementioned deficiencies of Kurihara and Sugano. Therefore, Applicants submit that the applied references fail to disclose or to have rendered obvious all of the elements of claims 1-8.

Reconsideration and withdrawal of the rejections are respectfully requested.

IV. Request for Rejoinder

Applicants also respectfully request rejoinder of non-elected method claims 9-15. Where product and process claims are presented in the same application, Applicants may be called upon under 35 U.S.C. §121 to elect claims to either the product or process. MPEP §821.04. However, in the case of an elected product claim, rejoinder will be permitted when a product claim is found allowable and the withdrawn process claim depends from or otherwise includes all the limitations of an allowed product claim. *Id.* Because non-elected process claims 9-15 include all the limitations of elected product claim 1, process claims 9-15 must be rejoined with the product claims when the product claims are found allowable.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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JAO:AMJ/dxc
Attachment:
Petition for Extension of Time
Date: November 16, 2009

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